Second Supplemental Proposed Rule Applying Phase IV Land Disposal Restrictions to Newly Identified Mineral Processing Waste Regulatory Impact Analysis

Comment Summary and Response
(May 12, 1997 Proposed Rule)

March 26, 1998

Commenter List

Commenter #	Commenter Name
COMM1001	ASARCO Incorporated
COMM1002	American Wood Preservers Institute
COMM1003	Chemical Products Corporation
COMM1004	Occidental Chemical Corporation (OxyChem)
COMM1005	American Chrome & Chemicals, L.P.
COMM1006	Marine Shale Processors, Inc. (MSP)
COMM1007	Frontier Technologies Inc. (FTI)
COMM1008	Florida Phosphate Council
COMM1009	World Resources Company
COMM1010	International Metals Reclamation Company, Inc. (INMETCO) and INCO United States, Inc.
COMM1011	CITGO Petroleum Corporation
COMM1012	The Ferroalloys Association (TFA)
COMM1013	GF Industries
COMM1014	Westinghouse Electric Corporation
COMM1015	Ms. Linda W. Pierce
COMM1016	Chemical Manufacturers Association
COMM1017	Battery Council International (BCI) and Association of Battery Recyclers (ABR)
COMM1018	Collier, Shannon, Rill & Scott, PLLC for Specialty Steel Industry of North America (SSINA)
COMM1019	The Doe Run Company (DRC)
COMM1020	American Portland Cement Alliance (APCA)
COMM1021	American Petroleum Institute
COMM1022	Eastman Kodak Company
COMM1023	U.S. Department of Energy (DOE)
COMM1024	Lead Industries Association, Inc. (LIA)
COMM1025	RSR Corporation
COMM1026	Homestake Mining Company
COMM1027	Solite Corporation
COMM1028	Laidlaw Environmental Services
COMM1029	Newmont Gold Company
COMM1030	Chemical Products Corporation (CPC)
COMM1031	Florida Institute of Phosphate Research (FIPR)
COMM1032	Savage Zinc, Incorporated
COMM1033	General Motors Corporation (GM)
COMM1034	ASARCO Incorporated
COMM1035	Utility Solid Waste Activities Group (USWAG)
COMM1036	Okanogan Highlands Alliance (OHA)
COMM1037	CF Industries, Inc.
COMM1038	The Fertilizer Institute
COMM1039	American Iron and Steel Institute (AISI)

Commenter #	Commenter Name
COMM1040	Molycorp, Inc.
COMM1041	Cyprus Amax Minerals Company
COMM1042	Law Office of David J. Lennett (for Environmental Defense Fund, Mineral Policy Center, Southwest Research and Information Center, North Santiam Watershed Council, Pamlico-Tar River Foundation, Siskiyou Regional Education Project, Okanogan Highlands Alliance, and the Louisiana Environmental Action Network
COMM1043	BHP Copper
COMM1044	National Lime Association
COMM1045	The Silver Council
COMM1046	Mineral Policy Center
COMM1047	American Gas Association (AGA)
COMM1048	National Mining Association
COMM1048-D	National Mining Association
COMM1048-E	National Mining Association
COMM1049	Lake Superior Alliance (LSA)
COMM1050	Reynolds Metals Company
COMM1051	Brush Wellman Inc.
COMM1052	Brush Wellman Inc.
COMM1053	Brush Wellman, Inc.
COMM1054	Kennecott
COMM1055	Mr. William R. Schneider, P.E. (Consultant to Macalloy Corp.)
COMM1056	Nexsen, Pruet, Jacobs & Pollard, LLP (Counsel to Macalloy Corporation)
COMM1057	Photo Marketing Association International
COMM1058	Menominee Indian Tribe of Wisconsin
COMM1059	Lake Michigan Federation
COMM1060	Mr. David Isbister
COMM1061	Ms. Marianne Isbister
COMM1062	Rolling Stone Lake Protection & Rehabilitation District
COMM1063	Ms. Laura Furtman
COMM1064	Mr. Gregory Furtman
COMM1065	Ms. Jennifer Pierce
COMM1066	Cement Kiln Recycling Coalition
COMM1067	Institute for Interconnecting and Packaging Electronic Circuits
COMM1068	Horsehead Resource Development Company, Inc.
COMM1069	Macalloy Corporation
COMM1070	Ms. Dori Gilels
COMM1071	Kenneth and Linda Pierce
COMM1072	Ms. Ellen Wertheimer
COMM1073	Mr. Earl Meyer
COMM1074	New York State Department of Environmental Conservation
COMM1075	United States Department of Defense (DoD)
COMM1076	Clean Water Action Council of Northeast Wisconsin, Inc.
COMM1077	Air Products and Chemicals, Inc.

Commenter #	Commenter Name
COMM1078	EnviroSource Treatment and Disposal Services, Inc. (TDS)
COMM1079	Independence Mining Company Inc. (IMCI)
COMM1080	Uniroyal Chemical Company, Inc.
COMM1081	Eastman Chemical Company
COMM1082	Nevada Mining Association (NvMA)
COMM1083	Kerr-McGee Corporation
COMM1084	Elf Atochem North America Inc.
COMM1085	New Mexico Mining Association
COMM1086	DuPont
COMM1087	Waste Management
COMM1088	FMC Corporation
COMM1089	Phelps Dodge Corporation
COMM1090	Arizona Mining Association
COMM1091	Beazer East, Inc.
COMM1092	AlliedSignal Inc.
COMM1093	Placer Dome U.S., Inc.
COMM1094	Phosphorus Producers Environmental Council
COMM1095	U.S. Borax, Inc.
COMM1096	Appalachian Producers
COMM1097	Aluminum Company of America; Kaiser Aluminum & Chemical Corporation; Ormet Corporation; and Reynolds Metals Company.
COMM1098	AMAX Metal Recovery, Inc.
COMM1099	Barrick Resources, Inc.
COMM1100	Koppers Industries, Inc.
COMM1101	IMC-Agrico Company
COMM1102	Echo Bay Mines
COMM1103	Mining Impact Coalition of Wisconsin Inc.
COMM1104	Precious Metals Producers (PMP)
COMM1105	California Mining Association
COMM1106	Freeport-McMoRan
COMM1107	Shoshone-Bannock Tribe Land Use Department
COMM1108	Texaco
COMM1109	Occidental Chemical Corporation (OxyChem)
COMML1001	Photographic & Imaging Manufacturers Association, Inc.
COMML1002	Phosphorus Producers Environmental Council
COMML1003	Environmental Technology Council

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Mineral Processing Regulatory Impact Analysis

A.   General Discussion

Comment: Four commenters indicated that the RIA is inadequate and possesses many fundamental shortcomings. (COMM1034, COMM1048, COMM1054, COMM1088) Two of these commenters asserted that the RIA lacked the necessary information for the costs and benefits analyses to provide accurate conclusions of the impacts, or to justify the rule on the basis of risk reduction. (COMM1048, COMM1054) One of these commenters also stated that the RIA lacked sufficient documentation to verify the risk calculations in EPA's risk assessment. Without this complete disclosure, the commenter indicated that it was difficult to determine the accuracy of the benefit analysis. The commenter also asserted that the detailed risk calculations provided in response to a request for this information was poorly organized and too voluminous for the public to use in evaluating the risk calculations. (COMM1048)

Another commenter mentioned that the information in the docket was insufficient to demonstrate any benefit from reduced environmental risks or to perform meaningful cost analysis. The commenter also suggested that EPA has severely underestimated the quantities of formerly Bevill-exempt solid waste that would require alternative waste management and the related compliance costs. (COMM1088)

Commenter(s): COMM1034; COMM1048; COMM1054; COMM1088

Response: The Agency believes that it has provided an appropriate level of detailed information providing supporting RIA calculations. The Agency acknowledges that the supporting risk calculations are both voluminous and complex, but believes that the risk methodology used in the RIA was the most complete and accurate approach, given the available data. These supporting calculations, though complex and large in number, are necessary to perform the cost modeling and risk analysis. Finally, the Agency acknowledged in the RIA that not all the costs associated with the Bevill feedstocks restriction were quantified in the RIA due to data limitations (see RIA, p. 8).

Comment: Another commenter added that the RIA is deficient because it fails to consider:

- whether the proposal will achieve the regulatory objective;
- direct costs associated with its proposal, such as the lost value of the metals in the alternative feedstocks that would be disposed;
- indirect costs, such as disruption to the economy;
- any actual quantifiable benefits associated with restrictions on the use of alternative feedstocks; and
- whether the rule is cost-effective. (COMM1034)

Commenter(s): COMM1034

Response: The Agency notes that three of these concerns are directly related to the alternative feedstocks proposal, for which the Agency did not attempt to quantify all of the costs associated, as explained in the RIA. The Agency is no longer considering the alternative feedstocks proposal. Further, the Agency believes that the each of the options considered in the RIA would achieve a balance between the sometimes competing regulatory objectives set out by the Agency (such as balancing the desire to prevent unsafe recycling and the desire to encourage resource recovery).

Comment: Two commenters indicated that an error was made in Exhibit A.2-1 of the RIA by including spent barren filtrate in the revised benefits analysis. The commenter believed that spent barren filtrate from beryllium processing is a Bevill-exempt beneficiation waste, and mentioned that EPA's *Characterization of Mineral Processing Wastes and Materials* (1997) indicated that spent barren filtrate is a beneficiation waste. The commenter requested further clarification of the status of spent barren filtrate. (COMM1048, COMM1051)

Commenter(s): COMM1048; COMM1051

Response: The agency incorrectly classified spent barren filtrate from beryllium processing as a beneficiation waste stream in *Characterization of Mineral Processing Wastes and Materials*. Spent barren filtrate is a mineral processing secondary material as indicated in Exhibit A.2-1.

B.   Cost Methodology

1.   Assumptions, Uncertainty, and Input Data

Comment: One commenter stated that much of the input data was based on "professional judgment" rather than data from actual industry experience. The commenter believed that EPA estimating practices provided a poor foundation for the cost estimates based upon these assumptions. The commenter remarked that 56 percent of the waste considered in the RIA is based upon these inexact methods of estimation. This commenter added that EPA also relied heavily on assumptions about pre-Phase IV recycling practices. This commenter believed a high degree of uncertainty exists with respect to the initial data used in EPA's calculations. (COMM1048)

Commenter(s): COMM1048

Response: The Agency points out that it has repeatedly requested data on the quantities and characteristics of newly identified mineral processing secondary materials (61 FR 2338, 2367, January 25, 1996), and has incorporated the additional data received in comment on the supplemental proposal and the second supplemental proposal. Despite these efforts, however, there are still significant numbers of waste streams for which the Agency lacks information on generation rate, hazardous characteristics, or both. To account for the uncertainty in the input data, the Agency continues to use a bounding analysis to quantify the level of confidence in the results.

Comment: One commenter was concerned about the selection of the waste streams used in the RIA's economic impact analysis. It was unclear to the commenter whether EPA used appropriate criteria to select the waste streams, especially with regard to EPA's application of its "step-wise" selection methodology. The commenter noted that while the description of how waste streams were chosen was essentially identical to the process described in the 1996 RIA, there appear to be 30 fewer waste streams in the 1997 RIA. EPA did not provide an explanation for the change in the number of waste streams included in the analysis. The commenter also pointed out an inconsistency between the 1997 RIA text describing the selection criteria, which does not refer to land-based management, and the accompanying flow-chart, which does include this reference. In addition, the flow chart indicates that no fully-recycled material would be affected by the rule, while in reality fully-recycled materials currently managed on the land would be affected. (COMM1048)

Commenter(s): COMM1048

Response: Changes in the input data set reflect new information provided in comments on the January 1996 supplemental proposed rule and other new information. These changes were documented in EPA's background document *Characterization of Mineral Processing Wastes and Materials*, EPA, 1997, which was included in the docket for the second supplemental proposed rule, and have been included as an appendix to the final RIA. The Agency agrees with the commenter about the existence of the inconsistency in describing when fully recycled waste streams were included in the analysis. In the Final RIA, fully recycled materials that are not stored on the land are not affected by the proposed rule, and are therefore not included in the data set.

Comment: One commenter stated that it was unclear what steps EPA had taken to create baseline assumptions about storage/recycling and treatment/disposal costs. This commenter reviewed each of the baselines used in the analysis. The commenter pointed out that the No Prior Treatment Baseline was not analyzed in the RIA because, according to EPA, "the costs of managing wastes with no prior treatment are not properly attributed to this rule." However, the commenter believed that this baseline may be the most appropriate baseline for materials that are currently recycled. (COMM1048)

Commenter(s): COMM1048

Response: The Agency disagrees. The no prior treatment baseline is inappropriate because it reflects non-compliance behavior.

Comment: One commenter stated that there were two levels of uncertainty in EPA's analysis: the uncertainty associated with the industry baseline and the uncertainty associated with the quality of EPA's input data (e.g., quantity generated and hazardous characteristics). The commenter stated that the implications of adding a second layer of uncertainty atop the first were not addressed by EPA. The commenter believed that the cumulative effect of these two layers of uncertainty was to reduce the reliability of EPA's analysis. Overall, the commenter believed the RIA likely underestimated the costs and negative economic impacts of the proposed regulation. (COMM1048)

Commenter(s): COMM1048

Response: The Agency disagrees with the commenter's premise that the different baselines compound the uncertainty inherent in the input data, and therefore underestimated the costs and impacts of the regulation. Of the three baselines, only the modified prior treatment baseline was considered in the main report. The no prior treatment baseline is included in Appendix A to determine the total cost of the RCRA program, and the prior treatment baseline was included in Appendix A to determine the costs to facilities in full compliance with previous rulemakings. Because the Agency was not entirely certain whether the majority of facilities operate under modified prior treatment assumptions or prior treatment assumptions, the Agency chose the modified prior treatment baseline as the main baseline in the analysis, as it is more conservative, and therefore, more likely to overestimate than underestimate cost. In addition, the Agency has used conservative assumptions about waste quantities and hazardous characteristics to avoid underestimating cost. As a result, there is no "cumulative" effect of these "two layers of uncertainty." Finally, the Agency does not believe the RIA underestimated the costs of proposed regulation.

Comment: One commenter reviewed the methodology used to create the dynamic analysis. This commenter predicted that given EPA's preferred baseline assumption and option (Modified Prior Treatment baseline - Option 1), recycling will fall. (COMM1048)

Commenter(s): COMM1048

Response: The agency points out that while recycling was predicted to decline under the Modified Prior Treatment baseline - Option 1 combination, this combination is not the Agency's preferred option baseline combination.

Comment: A commenter noted that the percentages used by EPA for treatment and disposal or storage and recycling appear to be based on "professional judgment," rather than having an empirical or theoretical basis. The commenter believed that waste streams are typically either completely recycled or completely treated and disposed. Therefore, actual shifts in storage/recycling and treatment/recycling practice might be significantly larger than the shifts EPA projected. The commenter stated that this weakness in the analysis was further compounded because no adjustments were made by EPA to tailor its recycling/disposal assumptions to fit the particular characteristics of the different waste streams or given sectors. (COMM1048)

Commenter(s): COMM1048

Response: The Agency agrees with the commenter that at a particular facility, a waste stream is probably more likely to either be fully recycled or not recycled at all than to be partially recycled. The Agency notes, however, that some facilities may not be able to fully recycle some waste streams, and more importantly, whether a facility recycles all or part of waste stream is immaterial to the cost modeling, because cost modeling consists of describing complex waste management processes using simplifying assumptions. For instance, the modeling represents what happens at model facility in each sector. Therefore, in sectors with multiple facilities, a small shift in the amount of material moving from treatment and disposal to storage prior to recycling may represent a single facility's decision to recycle a particular waste stream. Finally, contrary to the commenter's assertion, the multipliers are based on historical empirical data indicating the shift in management of two listed wastes (F006 and K061) from treatment and disposal to recycling after land disposal restrictions for these materials were employed.

2. EPA's Cost Functions

Comment: One commenter asserted that the range of EPA's cost functions was too small given the wide range of facility sizes actually encountered in industry. The commenter stated that cost equations should only be used for facilities within the range used to derive the equation. The commenter stated that because it was unclear how EPA chose the range of waste stream quantities used to derive the equations it was unclear whether all of the waste streams potentially affected by the proposed rule fall within the quantity domain of the cost functions. The commenter also believed the cost functions were not logical, and included the following example to illustrate this point. For the storage of secondary materials in roll-off containers cost function, the cost of storage declines as quantity increases. The cost of storage would be $102,210 for a waste quantity of 6,700 mt/yr and zero at a quantity of 13,469 mt/yr. Finally, the commenter observed that the cost functions were also limited because they are not properly sized to accommodate growth in industry output and, consequently, waste quantities. For example, if a five percent yearly rate of growth was assumed for a waste stream of 4,000 mt/yr, the quantity would grow to exceed the range of the cost function within approximately 13 years. The commenter stated that because the analysis is based on a 20 year time period, the issue of growth or decline in the mining sector presents another weakness in the study. (COMM1048)

Commenter(s): COMM1048

Response: The Agency agrees with the commenter that cost functions should only be used in the range of quantities used to derive them, and points out that the Agency only used cost functions within their relevant range. The storage cost functions were designed to represent the most likely management methods used in industry. For example, small quantities of solid materials would likely be stored in drums, whereas larger quantities would more likely be stored in buildings or piles. Therefore, rather than derive a cost function for storage of solids materials in drums over the entire range of possible waste quantities (generally up to 45,000 mt/yr for solids), the Agency defined a likely range of materials that would be stored in drums (up to 200 mt/yr) as a basis for the storage of solids in drums cost function.

The commenter illustrates the importance of using the cost functions within their relevant range. The commenters second data point, (13,469 mt/yr) is clearly outside of the range of 50 to 7,500 mt/yr used to derive the storage of solids in roll-off containers cost function. Finally, the Agency had no reason to expect that the quantity of wastes would grow over time, and has not attempted to include this growth in the cost modeling. If anything, the Agency would expect a decrease in the amount of waste generated following promulgation of land disposal restrictions; this phenomenon (source reduction) has been extensively documented in connection with prior LDR rulemakings.

Comment: One commenter reviewed EPA's derivation of cost functions, and noted that few actual data were used to derive the cost functions. The accuracy of the cost functions is therefore highly dependent on the assumptions EPA used in developing the activity level costs. The commenter stated that it was unclear whether the process descriptions underlying the activity level costs were accurate. "Given the level of uncertainty reflected in the RIA regarding other aspects of the waste stream, caution regarding EPA's activity level analysis may be warranted, particularly given the level of specificity that the RIA's cost estimation methodology requires." (COMM1048)

A second commenter thought that the stabilization cost function was not realistic because it did not account for the variety of materials that exist at mineral processing facilities. These materials can range in consistency from large solid chunks to fine particulate dust and fume, and can be dry, wet, hot, molten, acidic, or pyrophoric. The commenter stated that EPA had not accounted for this variation in its cost estimates. For example, the commenter also pointed out that to treat slag on-site, it would have to be granulated, and the granulation process would require process water, which would also have to be treated. The commenter expressed concern about whether the slag could be treated on-site in less than 90 days, and whether the treated slag would meet the LDR treatment standards. The commenter pointed out that if treatment did not occur in 90 days, a RCRA treatment permit would be required, which would cause full RCRA treatment costs to be incurred. Finally, the commenter stated that it was not clear whether the RIA was correct in the assumption that, after on-site treatment, wastes meeting the LDR standards could be placed in Subtitle D waste piles, because RCRA section 3004(m)(2) states that, "after treatment to meet the LDRs, hazardous wastes may be disposed in a land disposal facility which meets the requirements of this Subtitle." The RIA does not account for the cost of meeting Subtitle C design standards. (COMM1034)

Commenter(s): COMM1034; COMM1048

Response: The Agency again points out that the cost functions were based on simplifying assumptions and are designed to capture the costs at an average facility. Therefore, these cost functions may not perfectly describe the costs to a particular facility, but should capture the overall cost to the industry. Further, the Agency believes that the stabilization function would not need to be changed for most of the

material types listed, with the possible exception of large chunks of slag. The Agency notes that most of the solid wastes in the data set are sludges or have a small particle size (such as APC dust). In addition, most mineral processing slags are either excluded from RCRA Subtitle C jurisdiction pursuant to the Bevill amendment (40 CFR §261.4(b)(7)) or are generated in sufficiently low volumes that they are not likely to contribute to much of the cost of the final rule. Moreover, any granulating equipment would most likely be required to treat the material in the baseline absent LDR regulation in order to decharacterize the material prior to disposal in a Subtitle D nonhazardous landfill. Thus, any cost attributable to the purchase of such equipment would not be attributable to the Phase IV rulemaking. In addition, 90 day storage limits on the treatment of hazardous waste by generators in tanks, containers, or buildings are already applicable to the mineral processing industry (40 CFR §262.34). Thus, the costs of this storage limit are not attributable to the LDR Phase IV rulemakings.   The Agency also believes that facilities could and currently are stabilizing materials to UTS levels on-site in less than 90 days, so that a RCRA permit would not be necessary. Finally, wastes that have been treated below both the characteristic and universal treatment standard would not be required to be discarded in a Subtitle C permitted landfill (40 CFR §§261.3(d)(1) and 270.1). Rather, these wastes could be discarded in a Subtitle D non-hazardous waste landfill.

3.   EPA's Dynamic Analysis

Comment: One commenter stated that the dynamic analysis does not take into account the effect of the incremental regulatory cost on the quantities of waste that would be produced following the LDR. The commenter stated that the incentive effects of the proposed rule should affect the total quantity of waste generated, in addition to the percentages of the quantities moving through the storage/recycling and treatment/disposal process. The commenter felt that the analysis should be considered "comparative statics" rather than a true dynamic analysis. To be a full dynamic analysis of the effect of this regulation, the RIA would have to consider the effects of the proposed rule on growth and long-term productivity. The RIA does not incorporate such long run considerations. (COMM1048)

Commenter(s): COMM1048

Response: The Agency does not believe it has sufficient data to conduct the type of analysis the commenter describes as a "true dynamic analysis." Further, such an analysis is beyond the scope of a typical RIA.

Comment: One commenter stated that two components of the RIA appeared to be in conflict: 1) the fact that pre-recycling storage and treatment/disposal percentages were chosen on the basis of professional judgment and 2) the fact that EPA has cost functions for these practices. The commenter asserted that cost functions imply certain optimal pre-recycling storage to treatment and disposal ratios. Specifically, this "cost minimizing" behavior implies that firms with a given amount of waste would set the proportions sent to treatment/disposal and storage/recycling such that each additional unit of waste would be sent to that process which has the lower marginal cost. The commenter stated that because the RIA utilized cost functions, the minimum marginal cost could be found for each unit of waste in each waste stream, and professional judgment is therefore not necessary. The commenter recalculated the costs for the titanium and titanium dioxide sector and found that the incremental cost for the sector rose by about four percent when cost minimizing behavior was assumed. The commenter added that while this appears to be a relatively small increase, the results of such an analysis may vary between sectors and could have a significant effect on the overall cost of the proposed rule.

Commenter(s): COMM1048

Response: The Agency disagrees. Whether a facility is recycling secondary materials in the baseline is not simply a function of the cost of storage relative to the cost of treating to TC levels and disposing of the material. Other baseline considerations, such as the inherent value of the material, ability to process all the material, and the need for process modifications, all play a role in determining baseline practices. Because storage prior to recycling is almost always less expensive than treatment and disposal, and yet not all secondary materials are currently recycled, these factors obviously apply to real-world decision making and must be taken into account. In addition, the Agency reminds the commenter that the cost model uses baseline management practices to reflect management at the sector level rather than at the facility level, so that while a facility may recycle a stream in its entirety or not, all of the facilities in a sector may not manage the waste stream in the same manner.

4.   RIA Does Not Evaluate Full Cost of Alternative Feedstock Proposal

Comment: Four commenters stated that the dynamic analysis may not fully capture the decline in recycling because the RIA analysis did not cover materials outside of the RIA's initial pool of 118 waste streams that might effectively be prohibited from being recycled through a Bevill-exempt unit. (COMM1029, COMM1043, COMM1048, COMM1089)   Two commenters stated that a number of other waste streams appear to be recycled through Bevill-exempt units, including materials from other industries, contaminated soils containing mineral values, and secondary materials from gold, silver, and beryllium production to name a few. (COMM1048, COMM1089)   The economic impact on these streams could be substantial, yet the RIA failed to specifically identify these affected secondary materials, or to estimate the economic impacts on processors of these materials. (COMM1048) Additionally, EPA has approached mining companies in the past to accept soils excavated from Superfund sites for recycling. The loss of this cost-effective and environmentally sound management option for these materials was not considered in the RIA. The commenter felt this was significant because the only other option to costly disposal would be to leave higher levels of contaminants in place. (COMM1089)   Another commenter pointed out that the RIA assumed the gold sector will not incur any costs in complying with the proposal. The RIA focused only on mineral sectors that generate secondary materials that are currently being disposed or stored prior to recycling in land based units. The RIA did not include mineral processing secondary materials that are recycled without storage in land based units or secondary materials that do not derive from mineral processing operations. (COMM1029)

Commenter(s): COMM1029; COMM1043; COMM1048; COMM1089

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: Three commenters thought that the RIA ignored the possibility that the proposed rule would cause mineral processing facilities to dispose of valuable secondary materials rather than lose the Bevill exempt status of materials like mill tailings and smelter slag. These commenters stated that under the alternative feedstocks proposal, non-Bevill waste streams that were recycled through Bevill-exempt units prior to the rule would generally need to be recycled elsewhere or to be treated and disposed. These commenters thought this drop in recycling would result in two types of cost impacts: 1) increased treatment and disposal costs and 2) loss of revenue due to the inability to sell the mineral values contained in the no-longer-recycled streams. (COMM1043, COMM1048, COMM1089) Another commenter suggested that a third type of cost also may occur in the form of substitution costs, as the industry seeks new "virgin feedstocks" to replace the non-Bevill streams. (COMM1048) One commenter also thought that while the mining industry and the environment would suffer, the waste treatment industry would benefit from the increased disposal of recyclable materials. (COMM1089)

Commenter(s): COMM1043; COMM1048; COMM1089

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter stated that the RIA failed to capture the actual incremental cost to industry of the proposed rule, which consists of:

1) The incremental cost for storage and treatment/disposal for each waste stream (including treatment costs for previously recycled streams),
2) The lost revenues resulting from declines in the quantity of material available for sale,
3) The acquisition and processing costs imbedded in the material at the point the waste stream is treated/disposed,
4) Any increase in additional virgin material or reagent costs for feedstock or other displaced materials, and
5) Processing costs for the replacement materials.

Because many of these costs were not included in the RIA, the commenter asserted that the RIA underestimated the cost of the proposed regulation. (COMM1048)

Commenter(s): COMM1048

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter enumerated several reasons why facilities may not be able to use additional virgin feedstocks to replace previously recycled secondary materials. First, for facilities that send secondary materials to an unrelated processor's facility, there would be a straightforward loss of revenue, because additional feedstock would have no effect on the unrelated processing facility's ability to accept material. Second, a processing facility might already be operating at full capacity. Third, separate environmental or other government regulations, such as discharge limits, might restrict a processor's ability to expand processing of additional virgin feedstock. Fourth, while a facility might be able to use enough additional feedstock to replace the lost primary metal output, precious metal by-products sales might be lost if the facility was unable to replace the secondary materials with virgin feedstocks containing equal or higher concentrations of precious metals. Finally, some waste streams contain not only metal values, but also other materials that might be valuable to the production process. For example, at copper facilities, spent bleed electrolyte is recycled through a leach pad, so the metals can be recovered and additional acid does not need to be purchased. (COMM1048)

Commenter(s): COMM1048

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter provided discussion on the potential lack of availability of additional virgin feedstock, stating that some firms may not be able to obtain this additional material, or may be able to do so only at an increased cost. A firm's mines may be producing ore at maximum output, for example. In addition, the amount of ore needed to replace the metals in recycled materials could be enormous. For instance, Newmont Gold's ore grade cut-off is 0.04 ounces of gold, while slag currently recycled through the carbon-in-leach circuit typically contains hundreds of ounces of gold. Further, the commenter continued, if the virgin feedstock comes from outside sources and competition exists for these concentrates, incremental supplies of concentrates may only be obtainable at higher costs. The technical characteristics of some processing units, such as Missouri lead smelters, may limit the metallurgical characteristics of these concentrates. (COMM1048)

Commenter(s): COMM1048

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter provided more detail on the loss of cumulative processing costs imbedded in the recyclable material, noting that a significant portion of the processing costs have already been incurred by industry at the point when these materials would have to be treated and disposed. The commenter provided the following example to illustrate this point. ASARCO's El Paso, Texas smelter produces copper cottrell dust that is enriched in lead. This dust is further processed at ASARCO's lead smelter in East Helena, Montana. Upon leaving the El Paso facility, ASARCO has incurred 88 percent of the total cost of copper production. For ASARCO to obtain alternative virgin feedstock and process it to replace the recyclable metal values that were treated/disposed would require ASARCO to incur equivalent processing costs twice. (COMM1048)

Commenter(s): COMM1048

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter stated that the RIA did not consider all waste streams that may be affected under the proposed rule, indicating that an unknown number of additional waste streams may have to be treated and disposed rather than recycled. In addition, the RIA failed to include waste streams of other industries that are recycled through Bevill Exempt mineral processing units. The commenter expressed concern because the RIA assumed that these industries already have treatment/disposal or storage/recycling technologies available to handle these secondary wastes in the event that recycling through Bevill units is precluded. If this assumption is inaccurate, the regulatory costs associated with these other industries may not be an "incremental cost" as much as an entirely new cost. (COMM1048)

Commenter(s): COMM1048

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

5.   RIA Does Not Evaluate All Costs of Rulemaking

Comment: One commenter stated that the RIA did not consider the costs associated with a recycling legitimacy test that would be required under Option 1. The commenter indicated that two conditions must be met to pass the legitimacy test: 1) that recycled material must comply with a quantitative minimum mineral content; and 2) that hazardous constituents different from those normally found in customarily used raw materials must not be present in secondary materials. The commenter suggested that such a legitimacy test could be costly to industry, particularly if the second condition is interpreted literally. The commenter believed that if this option was implemented, many waste streams would no longer be recycled, causing an increase in treatment and disposal costs and a loss of revenue from recycling. (COMM1048)

Commenter(s): COMM1048

Response: The Agency disagrees in part with this commenter's statement. While it is true that no testing cost was factored into the estimated cost of Option 1, the Agency did assume that some materials would no longer be recycled, and therefore, that there would be a decrease in the rate of recycling of secondary materials to non-Bevill units. The Agency also notes that a quantitative legitimacy test is not included in the final RIA, rendering the issue moot.

Comment: One commenter stated that the use of the significantly affected test could result in higher costs at its facility. The commenter expressed reservations about the high costs and technical difficulty in representatively sampling its *in-situ* leach ore body to determine whether the use of refinery bleed solution was significantly affecting the levels of Appendix VIII constituents in the ore. If a single sample showed that the ore exhibited a hazardous characteristic, the commenter could be required to manage five hundred million to one billion tons of *in-situ* ore as hazardous waste. The commenter stated that given EPA's "punitive approach" to legitimate recycling, it would be highly inappropriate to risk its future by continuing to recover the copper contained in the refinery bleed solution. (COMM1043)

Commenter(s): COMM1043

Response: The Agency agrees with the commenter about the potential difficulty in sampling an *in-situ* leach ore body and notes that it requested comment on how best to address the sampling challenges posed by certain types of units, such as copper leach dumps (see 61 FR 2351). Because the Agency has not received any proposed solutions, the Agency cannot articulate, at this point, how these sampling requirements would need to be met. However, the Agency notes that it has withdrawn the significantly affected test requirements from the final rule.

Comment: One commenter indicated that the RIA did not take into account long-term effects of the proposed regulation on process innovation in the industry. That is, the RIA only considered changes in the mix of storage/recycling and treatment/disposal, such that new costs simply displaced a portion of old costs. The commenter believed this was inadequate because: 1) a new regulation might cause a change in technology or practices employed in at least some industries, and 2) the analysis implicitly assumes the mining industry has not incurred "sunk costs." The commenter then described sunk costs as investments specific to a given set of economic conditions and relationships, which are lost completely when the conditions change or relationships are dissolved. Such sunk costs may include capital investments specific to handling secondary materials for recycling which will no longer be economically useful under the new regulations. (COMM1048)

Commenter(s): COMM1048

Response: The Agency does not believe it appropriate to model long term changes in technology or practices employed. Without supporting detail on what changes the commenter believes would occur the Agency cannot validate such a claim. The Agency also points out that the cost modeling does in fact assume that capital costs associated with baseline storage practices are sunk in situations in which the capital costs associated with the storage practices cannot be transferred to other uses within the facility, or cannot be salvaged. For example, the capital costs associated with construction of storage piles and surface impoundments are lost, whereas the capital costs associated with drums, tanks, roll-off containers, and the like are not, because this equipment could be used for other purposes or potentially sold.

Comment: One commenter questioned whether all additional storage costs were actually included, noting that there was no reference to copper smelter brick, even though this material is typically stored on the land prior to recycling. The commenter also stated that the cost of complying with the storage and treatment requirements (included in the RIA) would be small compared to the cost of disposal of mineral processing secondary materials and the lost metal values they represent. (COMM1043)

Commenter(s): COMM1043

Response: Although copper brick is uniquely associated with the mineral processing industry, this material is also a mineral processing waste which when hazardous would be a hazardous waste under current regulations. However, because the baseline the Agency used in the RIA models all recycled mineral processing secondary materials stored in land based units, EPA agrees with the commenter that spent furnace brick when hazardous should have been modeled. Therefore, EPA will include spent furnace brick in the RIA for the final rule.

6.   Errors in Calculations

One commenter presented a detailed analysis of Appendix G of the RIA (Example Calculation: Titanium and Titanium Dioxide Sector). (COMM1048) The commenter attempted, in detailed step-wise fashion, to recalculate the incremental cost of the rule for the titanium and titanium dioxide sector, and stated that it found numerous errors in EPA's calculations and presentation. As a result, the commenter was concerned about the accuracy of the RIA in presenting incremental cost estimates for other sectors. The commenter's specific criticisms and concerns regarding Appendix G are further outlined below. Instances in which the commenter's methodology in recreating costs differ from EPA's methodology are also summarized below.

Comment: The commenter asserted that EPA has made a significant error in calculating the hazardous portion of the WWTP sludges/solids waste stream in Exhibit G-5. The commenter stated that in Exhibit G-2, this waste stream was given a "Y" overall hazard certainty classification. Therefore, because the reported generation rate (as outlined in Exhibit G-1) for WWTP sludges/solids is 420,000 mt/yr in the minimum, expected, and maximum value cases, Exhibit G-5 should report the hazardous portion of the WWTP sludges/solids waste stream as 420,000 mt/yr in all three cases (as it would have been multiplied by 1 in all three cases.) However, the commenter stated that it appears that EPA has multiplied the WWTP sludges/solids generation rate by 0 in the minimum value case, 0.5 in the expected value case, and 1 in the maximum value case, as if WWTP sludges/solids had a "Y?" overall hazard certainty classification. The commenter argued that these errors regarding waste stream quantity and the apparent confusion surrounding its application raises doubts about the model's merits and the possibility of generalizing it over all waste streams. (COMM1048)

Commenter(s): COMM1048

Response: The Agency has made an error in Exhibit G-2 in assigning WWTP sludges/solids a "Y" hazard certainty classification for chromium, and therefore, a "Y" overall hazard certainty classification. WWTP sludges/solids should be classified as "Y?" for chromium, (and "Y?" for the overall hazard certainty) as indicated in Exhibit I-6 of the RIA (see p. I-24). Therefore, the values presented in Exhibit G-5 are correct. The Agency regrets confusion caused by this labeling error, and will correct Exhibit G-2 to reflect a "Y?" overall hazard certainty for WWTP sludges/solids. However, the Agency disagrees with the commenter over the model's applicability, and asserts that the model correctly estimates (given its underlying assumptions) the incremental cost of the rulemaking to the mineral processing industry.

Comment: The commenter stated that in the RIA cost model, a particular material can be classified as one of four waste types:

- Spent Material,
- Sludge,
- By-Product, or
- N/A (N/A is used when the material is none of the above).

The commenter went on to state that the Agency uses the above classification, along with the regulatory option or baseline assumption being considered, to determine a portion of the waste stream that is treated/disposed, and a portion of the waste stream that is stored prior to recycling. The commenter stated that the Agency used Exhibits G-6 and G-7 to determine treatment/disposal and recycling multipliers for each titanium waste stream. The commenter outlined the following decision rules for determining the baseline multipliers in the example calculation:

1) If the waste type is N/A, the first line in Exhibits G-6 and G-7 is used.
2) If the waste type is sludge or byproduct, the second line is used.
3) If the waste type is spent material, the third line is used.

The commenter also outlined the following decision rules for determining the post-rule option multipliers in the example calculation:

1) If the waste type is N/A, Option 3 from NPT is used.
2) If the waste type is sludge or byproduct, Option 3 from MPT and PT is used.
3) If the waste type is spent material, Option 3 from PT is used.

The commenter also asserted that EPA has made an error in choosing the multipliers for (1) Pickle Liquor and Wash Water (a YS? spent material), (2) Leach Liquor and Sponge Wash Water (a YS? spent material), and (3) Spent Surface Impoundment Liquids (a Y? spent material). The commenter stated that according to Exhibit G-6, the baseline treatment and disposal percentages for these waste streams should be 85 percent, 85 percent, and 25 percent, respectively. However, the commenter stated that in Exhibit G-8, the EPA reports the multipliers for these waste streams as 80 percent, 80 percent, and 15 percent respectively. (COMM1048)

Commenter(s): COMM1048

Response: The Agency realizes that it has made a labeling error in Exhibits G-6 and G-7 of Appendix G of the RIA. In both tables, the first three lines of the "Baseline or Option" column should read as follows:

- No Prior Treatment
- Prior Treatment (SL/BP) and Modified Prior Treatment
- Prior Treatment (SM)

The Agency regrets the labeling error, but notes that this same information was presented correctly in Exhibits 3-3 and 3-4 of the RIA (pp. 17 and 18) and Exhibits A.1-3 and A.1-4 of Appendix A (pp. A-4 and A-5). The Agency has corrected Exhibits G-6 and G-7 of the RIA. Therefore, while the methodology outlined by the commenter above incorrectly describes how recycling multipliers were chosen and applied, the Agency believes this is also due to the labeling errors in Exhibits G-6 and G-7. The Agency maintains that all calculations in Appendix G are correct and consistent with calculations employed in the cost model.

To further diminish any confusion caused by the labeling error, the Agency would like to restate the following rationale used in Appendix G:

Appendix G presents an example calculation of incremental costs to the titanium and titanium dioxide sector under the Modified Prior Treatment baseline and post-rule Option 3. Therefore, the other baselines and post-rule options are not relevant in this case, and any information regarding those baselines and options included in Exhibits G-6 and G-7 are only included for purposes of reference.

Materials that are recycled can have one of three waste types: 1) sludge, 2) by-product, or 3) spent material. Materials that are not recycled or are not recyclable are given a "N" recycling classification -- meaning that they are always 100% disposed, regardless of the baseline or option being considered. Thus, for non-recycled/non-recyclable materials, a sludge, by-product, or spent material classification is inappropriate, because these classifications are specific to different types of recycling under RCRA. As a matter of course, the Agency would also like to note that under the Modified Prior Treatment baseline, the waste type classification is not relevant. The waste type classification is only relevant when the Prior Treatment baseline is under consideration.

Therefore, under the baseline, or pre-rule, scenario, the correct treatment/disposal and recycling multipliers are listed in the second row of Exhibits G-6 and G-7. Likewise, under Option 3, the correct multipliers are listed in the row entitled "Option 3 from MPT and PT (SL&BP)."

Comment: The commenter argued that a weakness of the EPA's analysis in the RIA is evident in that there is an absence of specific data and information regarding a large portion of the waste streams contained in the RIA data set. The commenter believed that in the titanium and titanium dioxide sector, the data regarding the waste quantities and recycling status appear to be particularly unreliable. (COMM1048)

Commenter(s): COMM1048

Response: The Agency shares the commenter's concern over the lack of specific data and information for many of the waste streams contained in the RIA data set. The Agency has, however, made concerted attempts to collect data from commenters through a number of rulemakings, and has received very little in the way of substantive data from commenters. In these cases, the Agency has had to, and will continue to, rely on best engineering judgment to determine waste quantities and recycling status.

Comment: The commenter stated that in Exhibit G-6, a general trend of increasing disposal is observed as the recycling status goes from "Y" to "N." Specifically, the percentage of a waste stream that is disposed becomes greater as one progresses from "Y" to "N." The commenter asserted that this trend is broken in the No Prior Treatment baseline, and in Option 1 from No Prior Treatment as well. The commenter believed that the 100 percent numbers in the "Y?" column of Exhibit G-6 should be 10 percent and 50 percent, respectively. (COMM1048)

Commenter(s): COMM1048

Response: The Agency disagrees with the commenter that the trend of increasing disposal percentages from "Y" to "N" should also be reflected in the No Prior Treatment Baseline and Option 1 from No Prior Treatment. In a non-compliance baseline, it would be less expensive to dispose of some secondary materials than to store them and potentially modify the process in order to recycle them.

Comment: The commenter stated that in the section of the model and the example calculation in which treatment and disposal costs are calculated, a large number of assumptions regarding cost functions are made, and therefore, the analysis lacks a strong degree of reliability. (COMM1048)

Commenter(s): COMM1048

Response: All models, by necessity, must incorporate assumptions. Because the commenter has not provided any specific problems and/or comments on the cost functions, the Agency cannot respond in any more detail or attempt to verify the commenter's concern.

Comment: The commenter asserted that the EPA has made numerous errors in the section of the example calculation in which the Agency computes storage costs. The commenter believed that either the wrong numbers were input into this section of Appendix G, or the equations provided in Exhibit G-17 are different than the ones used to calculate the values found in Exhibit G-19. Using Smut from Magnesium Recovery (a solid) in the post-rule case as an example, the commenter stated that 8,250 mt/yr of smut in the expected value case is stored prior to recycling. The commenter believed that this places smut into the storage quantity assigned to roll-off containers. The commenter calculated a storage cost for smut of $96,597, which is different from EPA's calculated cost of $63,887. The commenter felt that this discrepancy occurs in several of the storage cost calculations for the titanium and titanium dioxide sector, and the commenter argued that these discrepancies are worrisome, especially if they occur in other sectors as well. (COMM1048)

Commenter(s): COMM1048

Response: The Agency believes that the commenter has made an error in determining that in the post-rule case, 8,250 mt/yr of smut in the expected value case would be stored in a roll-off container. Examining Exhibit G-17, it is evident that 8,250 mt/yr falls within the building storage cost equation range (1343.1 mt/yr - 45,000 mt/yr). Plugging 8,250 mt/yr into the building storage cost equation results in a storage cost of $63,887, as reported in Exhibit G-19. Once again, the Agency asserts that all calculations in Appendix G are correct and consistent with calculations employed in the cost model.

C.   Risk Methodology

1.   Risk Assessment Qualifies Only as a Screening Analysis

Comment: One commenter asserted that the RIA lacks sufficient documentation to verify the risk evaluations because it is only a screening level analysis. Further, EPA's use of screening level analysis has many problems. First, screening level analysis yields little information that is useful from a quantitative perspective. At most, a "significant" risk from a screening level analysis (based on conservative assumptions) would identify the need for a more detailed risk assessment (based on additional data and more realistic assumptions). Second, EPA's assessment does not quantify risks attributable to each constituent and thus does not provide a basis for the constituent-based treatment standards in the proposed rule. Third, no inference can be drawn from the risk results because the quantification of risks for each waste stream/facility combination is based on an invalid aggregation of data. Lastly, EPA did not provide any population-based risk information. The commenter stated that because EPA did not quantify risk aggregated over the population, there was no way to compare EPA's risk estimates to the cost estimates that have been aggregated over the industry. Thus, the commenter suggested that a more detailed risk assessment would be necessary before any rulemaking can be finalized. (COMM1048)

Commenter(s): COMM1048

Response: The Agency used both risk screening and generic risk methodologies to evaluate the risks associated with the management of mineral processing wastes and the benefits associated with risk reductions. The assumptions used to develop the generic risk estimates are, as the commenter maintains, conservative, but they are reasonably so, and provide defensible estimates of risks. In developing risk estimates, EPA specifically avoided the use of multiple conservative assumptions that would have resulted in unreasonably conservative worst-case estimates of risks.

 In all of the analyses presented in the RIA, EPA calculates risks for individual constituents. The commenter correctly notes that the development of constituent-specific standards would require additional analyses of the risk results by constituent, but it was not the purpose of the screening risk assessment to support such detailed analyses. The methods used by EPA to aggregate risks were developed after careful review of the data and sensitivity analyses of the risk results, as will be discussed in more detail in response to the comments which follow. EPA is currently gathering additional data to help validate the results of the screening level assessment through the assessment of population risks for selected facilities.

Comment: The commenter expressed concern that the risk calculations termed "central tendency" and "high end" were misleading. These terms give the false sense that the central tendency scenario is the "expected" risk or "average" risk. The commenter remarked that EPA did not evaluate average risk, or "upper-bound" average risk, as called for in EPA's Risk Assessment Guidance for Superfund, but instead presented worst-case scenario risks as plausible and reasonable. The commenter pointed out that the central tendency and high end risk analyses used the same assumptions; the only difference between the two calculations was that the DAFs for each scenario differ. The commenter believed that the RIA did not provide reasonable estimates of expected risk reduction, and called for an assessment of expected population risk reduction under reasonable conditions. (COMM1048)

Commenter(s): COMM1048

Response: The general approach used to develop and characterize exposure and risk scenarios is consistent with current Agency guidelines related to the use of generic risk assessment. The central tendency estimate is developed using representative values for all risk model parameters. Because there are varying degrees of conservatism built into the various parameter values, there is no assurance that the central tendency risk would be the same as the average risk calculated using explicit probabilistic methods. EPA's current policy for defining "high-end" exposure scenarios is to identify "a few" of the variables that most strongly affect the risk estimates and vary them to reasonably high values while holding all other parameters at representative values. Sensitivity analyses conducted by the agency indicate that the variation in the constituent-specific DAFs accounts for the great preponderance of the variability between the two sets of exposure scenarios. Often, DAFs for the two scenarios differed by many orders of magnitude. Reasonable variations in the other exposure factors affected risk estimates by much smaller amounts (perhaps a factor of two to four in extreme cases). Therefore, only the DAF values were varied, and the values of all the other parameters were held constant in going from the central tendency to the high-end scenarios. Given that risks were tabulated in order of magnitude (factor of ten) ranges, varying the other exposure factors between the central tendency and high-end scenarios would have made only minor differences in the results of the generic risk assessment.

2.   Risk Assessment Cannot be Used to Justify Constituent Specific UTS Values

Comment: One commenter noted that the proposed regulation could be viewed as set of regulations -- each regulating a specific constituent. EPA's analysis in the RIA, however, failed to convey the necessary constituent-specific risk information, and therefore, did not justify the proposed constituent-specific treatment standards.

The commenter believed that constituent-specific risk information is necessary to verify the assumptions and computations done by EPA. The commenter also stated that it was difficult to meaningfully interpret potential chemical risks, because with the exception of carcinogenic arsenic risks, the RIA did not include a complete tabulation of chemical-specific risks for each waste stream/commodity. Rather, EPA grouped the chemical risks together, making it impossible to determine which chemicals were risk "drivers." Thus, the commenter believed that EPA was not justified in proposing UTS standards for all metals in the proposed rule, because it is possible that only a subset of the mineral processing waste constituents yield an EPA-calculated risk above regulatory guidelines. Yet, the current proposed rule would require all chemicals within a waste stream to achieve UTS, even those which pose no risk. On the basis of the commenter's analysis, the proposed regulation could not be justified on the basis of health protection, because concentration limits far greater than the UTS would provide an adequate level of human protection.

The commenter also provided an example of the type of constituent-specific risk information that it believed would be the minimum adequate documentation of the risk calculations necessary to evaluate the accuracy of the risk assessment, including pre-LDR DAFs, post-LDR DAFs, and associated risk and noncancer hazard quotients for each constituent comprising a waste stream at a specific facility. (COMM1048)

Commenter(s): COMM1048

Response: The revised RIA identifies risk driving constituents for both groundwater and non-groundwater pathway risks. The risk-driving constituents and associated risks are tabulated for the non-groundwater pathways. Since arsenic was the only carcinogenic constituent included in the risk assessment, there is no need to specify the risk-driving constituent for cancer risks.

As noted above, the purpose of the generic risk assessment was to identify potentially high-risk wastes, and to estimate risk associated with the most hazardous constituents of the wastes, not to document the rationale for UTS values for the constituents. The revised RIA and its appendices provide tabulations of all the groundwater DAF values used in the risk assessment.

3.   Aggregation of Risks is Invalid

Comment: One commenter asserted that there were three significant flaws in the way the EPA aggregated risk in the RIA risk assessment. First, the RIA was based upon discrete waste stream chemical constituent samples. This procedure is contrary to EPA risk assessment practice, which calls for determining risks using an aggregation of data (usually the 95th percent upper confidence limit on the arithmetic mean concentration). The commenter indicated that EPA's methodology to calculate chemical-specific risks, which were calculated for individual chemical analyses for individual waste streams, was too ambiguous to reproduce. EPA stated in the RIA that its approach was complex, and required a certain amount of professional judgment (RIA Appendix A, p. 32). Therefore, the commenter believed that EPA should outline exactly how samples were aggregated, because complete disclosure of the risk calculations would be needed to determine what "professional judgments" were used in selecting the leachate concentrations that fundamentally drive the calculation of risk.

The commenter also noted that the summary risk tabulations in the RIA suggested that certain aggregations of risk were erroneous. For example, the total number of samples with cancer risk for each commodity/waste stream in Exhibit A.2-3 should have equaled the total number of samples with arsenic observations for each commodity/waste stream, because arsenic is the sole ingestion carcinogen in the risk assessment. The commenter pointed out that the constituent data and the risk summary tables do not contain equal numbers of samples for arsenic in copper/acid plant blowdown. The commenter believed that the 30 samples used in the risk calculations represent a combination of 15 waste stream samples plus 15 recycled stream samples. The commenter indicated that if EPA used the 15 recycled streams as part of its calculations, the pre-LDR baseline would be invalid, because the pre-LDR baseline applies to the non-recycled streams. Hence, use of recycled streams would inflate the risk reduction benefits.

The second flaw in the aggregation of risk was that the lack of adequate documentation of all risks precluded an independent verification of the risk calculations. The commenter pointed out that there were discrepancies in EPA's risk assessment calculations, and used the acid plant blowdown waste stream generated by copper production to illustrate the flaw in the risk aggregation. For example, in Exhibit 4-3, EPA identified seven waste stream/facility combinations, although the total number of facilities listed in any of the cancer risk categories sums to six. The commenter believed that EPA should have explained this discrepancy, so commenters could reproduce EPA's assignment of waste streams to risk categories.

The third flaw was that the aggregation of risks produces results that are difficult to interpret in a meaningful manner. The commenter stated that EPA should have treated multiple observations from a single waste stream as a single observation drawn from the population of waste streams for that commodity. Instead, the commenter believed that EPA treated multiple measurements from the same waste stream as multiple observations and then inferred a distribution of waste stream constituent concentrations from this collection of multiple observations. The commenter indicated that EPA's aggregation methodology placed too much emphasis on the measurements taken from waste streams with heterogeneous concentration values. The commenter expressed concern that waste streams from which more measurements were taken would have greater influence on EPA's inferred industry-wide distribution of constituent concentrations. Finally, the commenter believed that EPA did not verify the values of outlier observations. (COMM1048)

Commenter(s): COMM1048

Response: In the early stages of the risk assessment activities supporting the mineral processing LDRs (see Sections 4 and 5 of the December 1995 Regulatory Impact Analysis) the Agency documented how important variations in the risks associated with the management of the newly identified mineral processing wastes were obscured by using single statistical measures, such as the mean or an individual percentile, for constituent concentration estimates. This analysis provided the rationale for the sample-specific risk assessment described in the April 1997 RIA.

The Agency assumes that the "aggregation" process referred to by the commenter is the process by which the numbers of samples with differing levels of risks are used to estimate the number of facilities at these risk levels. The approach used to perform this aggregation has also been well-documented, for example, in Appendix M of the 1995 RIA, which provides a detailed summary of how the benefits associated with reductions in waste management risks (measured against the No Prior Treatment Baseline) were evaluated based on sample-specific risk results.

Exhibit A.2-3 is clearly identified (on p.A-33) as summarizing risk results for the disposal, rather than for recycling, and thus, appropriately, includes risk results for all thirty samples for this stream. With regard to exhibit 4-3, there are seven facilities listed in both of the "post-LDR" panels of the table as managing copper acid plant blowdown. The totals in the pre-LDR panels add to six because of rounding error. (The possibility of rounding error is noted in a footnote to the table.)

The process used to estimate the number of facilities at specific risk levels from sample-specific risk results is complex, but is thoroughly documented in the spreadsheets which accompany the RIA. EPA has no alternative but to use professional judgment in the absence of more complete data on waste composition from specific facilities. As noted previously, the Agency also gathered site-specific information to more closely tie individual sample risk results to specific facilities, and these data are discussed in the revised RIA.

The Agency did examine the distributions of constituent concentrations in the various waste streams to identify values that appeared unreliable, and did remove one observation that exceeded reasonable solubility limits. Otherwise, the agency was hesitant to remove individual "outlier" values because of the known high heterogeneity of environmental sampling data. The commenter gives the example of arsenic concentration data in copper acid plant blowdown and claims that one extremely high value is an outlier and should be removed from the analysis. Our analysis indicates that these data fit a single lognormal[1] distribution very well, including the so-called outlier.

4.   Need for Population Risks Calculations

Comment: One commenter asserted that without a population risk assessment, the cost-benefit analysis is not useful. The commenter indicated that without this detailed assessment, it is impossible to quantify the overall risk reduction for the population. Thus, the overall benefits of the analysis were not quantified. The commenter recommended that EPA perform a population risk assessment to validate the cost-benefit analysis, because the necessary environmental and demographic data to perform this analysis are

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[1] A lognormal distribution is one in which the logarithms of the data fit a normal distribution. Lognormal distributions arise frequently when random dilutions occur, and a large proportion, perhaps the majority, of environmental data sets are lognormally distributed.

available to the Agency. In addition, the commenter noted that the lack of a population risk evaluation is inconsistent with risk assessments performed in prior EPA rulemakings such as the RCRA Subpart CC rule for TSDF air emissions. (COMM1048)

Commenter(s): COMM1048

Response: The Agency gathered data related to site conditions and populations potentially exposed to environmental contamination near selected mineral processing facilities, and discusses these data in the revised RIA.

5.   Arsenic Risk Characterization

Comment: The commenter stated that the arsenic cancer risks were overstated due to overly conservative toxicity assumptions and a failure to recognize that the estimated mineral processing risks were below risks of "background" exposure to arsenic. The commenter indicated that the RIA also failed to address the following issues mentioned in comments on the 1996 RIA:

- The cancer slope factor (CSF) of 1.5 is still too conservative based on existing data;
- The arsenic reference dose is overly conservative;
- The use of a risk target is inconsistent in different regulations; and
- The risks EPA considers high (10^{-5}) are actually lower than risks associated with the drinking water maximum contaminant level (10^{-3}) (MCL) or background dietary arsenic intake (10^{-4}).

The commenter recommended that the most logical value for the arsenic cancer slope factor (CSF) would be 1.0, or slightly below, because the suggested CSF of 1.5 is too conservative. The commenter provided alternative arsenic CSF values adjusted for water intake based on the following sources: Genders Combined - Mult-Weib model, 1992 IRIS, and 1995 IRIS data.

The commenter indicated that the arsenic reference dose set by EPA is also too conservative and should be raised. The commenter noted that EPA derived the RfD for arsenic ingestion by assuming that the Taiwanese study population had an inorganic arsenic intake of 2 micrograms/day from food. In actuality, the amount of inorganic arsenic in the Taiwanese diet may range from 62 to 290 micrograms per day. Also, the commenter mentioned that in another study, Schoof, et al. recalculated the RfD based on higher, more realistic estimates of inorganic concentrations in foods, and found that the RfD increased from 3×10^{-4} to 8×10^{-4} mg/kg-day. This means that the non-cancer hazard quotients would be elevated by a factor of about 2.7 fold.

The commenter also noted that the Agency inconsistently regulates the arsenic risk targets, because EPA's drinking water standard for arsenic is 10^{-3}, while the LDR IV has a groundwater/drinking water standard of 10^{-5}. In addition, the commenter pointed out that the arsenic cancer risks in the RIA are lower than the risks from background intake of arsenic. The commenter mentioned that pre-LDR scenario cancer risks were below either background or the risk associated with the MCL in 87 percent of the commodity/waste streams evaluated. Likewise, 80 percent of the commodity/waste streams evaluated fall below the risk threshold equivalent to the MCL.

Lastly, the commenter also noted that EPA has recognized a need to re-evaluate hazard or dose-response information for eleven substances, including arsenic, in a pilot study of chemical substances in IRIS. (COMM1048)

Commenter(s): COMM1048

Response: The commenter is correct in noting that the toxicological criteria values for arsenic are currently under review by the Agency. If this review results in revisions to these values, the risk assessment may be updated. Until this occurs, EPA believes that the values used in the risk assessment are appropriate for use in the RIA, and are consistent with those used in other OSW rulemakings.

This issue was raised in the comments on the previous version of the RIA, and at that time the agency pointed out that the revisions to the Cancer Slope Factor recommended by the commenter would not result in significant changes to the risk and benefits assessment results. The proposed approximately 33 percent reduction in the Slope Factor would minimally affect the assessment of risks, which is conducted only within ranges of an order of magnitude (factors of ten). The recommended change in the value of the noncancer Reference Dose (2.7-fold) would affect the results of the non-cancer risk assessment somewhat, but in all cases, the cancer risk from arsenic would still be present in all those waste streams in which arsenic is the risk-driving contaminant.

In the RIA, the agency cites an individual risk level of 10^{-5} as an appropriate "level of concern", based on the use of this value in other RIAs for OSW rulemakings. The Agency believes that it is appropriate to use different risk target values for different regulations, depending upon the nature of the affected populations, the medium or media of concern, and the overall risk and cost implications of the specific regulatory situation. It should be noted that the 10^{-5} risk level is not identified as a regulatory limit, but only as one of several order-of-magnitude levels against which risk and risk reduction could be measured.

6. Lead Risks Estimates Uses Incorrect "Calculated RfD"

Comment: One commenter remarked that the RIA estimated lead risks by using an RfD that was calculated from the MCL. The commenter stated that because the MCL for lead is not a health-based standard, a risk-based "calculated RfD" for lead based on the MCL was incorrect. In addition, the commenter noted that the "calculated RfD" method used was inconsistent with EPA's lead risk characterization guidance. As a result, the lead non-cancer "risks" were all incorrect. The commenter asserted that only a direct comparison of the drinking water concentration with the MCL would be appropriate for the RIA. (COMM1048)

Commenter(s): COMM1048

Response: This issue was also raised in comments on the previous version of the risk assessment. As noted on that occasion, the "hazard quotient" calculated for lead exposure is only an index of the potential for unacceptable exposures to lead in drinking water. It conveys neither a measure of the probability nor the frequency of adverse effects. EPA's Action Level for lead is an appropriate indicator of potentially dangerous exposures, corresponding approximately to the lead concentration in drinking water that might cause unacceptable levels of blood lead elevation in exposed children, in the absence of other sources of exposure. Clearly, this is an appropriate benchmark upon which to base a risk indicator.

7. Multipathway Risk Assessment for Storage of Recycled Materials

Comment: Two commenters asserted that the use of the multipathway risk assessment was inappropriate. (COMM1048, COMM1054) One commenter noted that EPA's Science Advisory Board had concluded that multipathway risk assessment lacked "scientific defensibility for its intended regulatory use." (COMM1054) The second commenter indicated that the multipathway assessment of the storage of recycled materials did not adequately present the actual or expected risk reduction. For example, the commenter argued, there is no risk-based reason to regulate recycled streams that are managed in waste piles, because the RIA stated that risks from waste piles were below levels of regulatory concern. This commenter believed that the overly conservative assumptions found in the risk assessment distorted the level of perceived benefits. The commenter indicated that these conservative assumptions presume that residents live right next to mineral processing facilities, though EPA has not established this fact. Also, EPA used conservative receptors, such as subsistence fishers and farmers, which overstated ingestion rates for the majority of the population. The commenter also added that the RIA's evaluation of recycled waste streams could not be considered until the HWIR risk assessment had been validated, because the multipathway risk evaluation was based upon the risk assessment methods in the HWIR rule. (COMM1048)

Commenter(s): COMM1048; COMM1054

Response: The methods used to assess potential non-groundwater pathway risks associated with recycled materials management consisted of single-pathway exposure assessment algorithms adapted from the HWIR-Media risk assessment. The individual exposure assessment equations themselves are generally-accepted screening level models, and have not been questioned by the SAB. One of the major concerns of the SAB was the lack of mass-balance among the exposure pathway models used for multipathway assessment. In the RIA for mineral processing wastes, the agency conducted mass-balance calculations for the various non-groundwater pathways, and determined that mass balance considerations did not significantly affect the magnitude of the risk results.

As noted previously, the agency also gathered site-specific data related to exposed populations and exposure pathways near specific mineral processing facilities and provides a discussion of how these results bear on the screening level risk results in the revised RIA.

8. Baseline for Risk Reduction Isn't Established

Comment: The commenter indicated that the baseline for risk reduction is poorly established in the RIA. The Agency used the modified prior treatment baseline (MPT) to characterize current operating practices, but the commenter argued that EPA had not performed a risk reduction analysis based on these conditions. This was because EPA had not developed quantitative estimates of benefits associated with changes in waste disposal practices in relation to the MPT baseline. The commenter questioned the relevancy of the pre-LDR scenario, which presumed no prior treatment and appeared to be the actual baseline evaluated by EPA. The commenter believed use of the no prior treatment baseline was inappropriate because EPA characterized the MPT baseline as most representative of current practice. Because EPA concluded that the risk reduction associated with the MPT baseline was minimal, the commenter held that the proposed rule yields little risk reduction. The commenter added that similar conclusions resulted from the lack of a quantified risk reduction analysis for the recycled waste streams.

Commenter(s): COMM1048

Response: The Agency acknowledges that the health benefits of the proposed LDRs are minimal for waste disposal when measured against the MPT, because it is expected that there will be relatively little change in waste management practices under the ~~proposed~~ rule compared to this baseline.

9. Flaws in Groundwater Dilution Attenuation Factors (DAFs)

Comment: The commenter expressed concern that the chemical-specific dilution attenuation factors (DAFs) were erroneous. The commenter believed that the DAFs were inadequately documented given the complexity of their derivation, and that a complete and detailed disclosure of the derivation of the DAFs was necessary. The commenter asserted that the discrepancies between the DAFs used in the RIA as compared to DAF values from EPA's HWIR rule suggested the possibility that EPA used incorrect assumptions in the risk calculations. The commenter doubted the validity of the DAF values for the following reasons:

- There is no physical-chemical reason for the enormous differences (million-fold changes) between Pre-LDR and Post-LDR scenarios;
- The RIA claimed that the DAF values were concentration specific, which was inaccurate for several important chemicals, and could not explain the vast differences in DAF values; and
- EPA did not document the DAF values used for the recycled waste streams, and there was no apparent reason for the large differences in the recycle case DAFs as compared to the non-recycle case.

The commenter also remarked that while the DAFs were derived from the EPACMTP model, the "Groundwater Pathway Analysis for Mineral Processing Wastes -- Background Document" provided insufficient information on intermediate model calculations and detailed model output. This information is essential to allow for independent review of the calculated DAFs.

Finally, the commenter stated that the derivation of the DAFs for the recycled materials is not documented in the RIA, and no explanation is given for the large differences (multiple orders of magnitude) in the DAF values used in the risk calculations for the storage of recycled materials versus non-recycled materials. (COMM1048)

Commenter(s): COMM1048

Response: The Agency believes that the differences in DAF values adequately reflect the potential variations in estimated groundwater concentrations at receptor wells as a function of varying waste and constituent characteristics, concentrations, and masses and site conditions. The extremely high variability in the DAF values reflects not only the physical processes governing releases and transport of the constituents, but also the variability of constituent concentrations over time and space. Relatively small changes in waste mass, hydrogeological conditions, or facility characteristics can result in very large changes in the estimated time pattern of concentrations over time at receptor wells at varying locations near the facility. For example, under one set of assumptions (large leachate volumes to drive constituents through the vadose zone), the resultant groundwater concentrations at all groundwater wells may become elevated early in the modeling run. In the absence of sufficient rainfall to drive transport in the vadose zone, releases may be smaller, and the flow velocities through the vadose zone and groundwater aquifer may be so slow that the constituent never reaches some of the downgradient wells at all within the time frame of the analysis. This is completely consistent with the tremendous difference between the pre- and post-LDR DAFs seen in the mineral processing risk assessment.

The commenter pointed out that the report for the groundwater pathway analysis of Mineral Processing Wastes did not provide details on the derivation of DAF values. The DAF, as discussed in Section 2.3 of the above report, was calculated as the ratio of source leachate concentration to the receptor well concentration. The receptor well concentrations were obtained using EPACMTP model simulations, and are based on the fate and transport processes that incorporate data on the characteristics of Waste Management Units (WMU) and the wastes managed in them, the climatic conditions of the WMU's geographical locations, the hydrogeologic properties of subsurface soils and groundwater and the physicochemical characteristics of contaminants in the waste. into the minerals processing report was considered unnecessary. For the purpose of groundwater modeling of mineral processing wastes, the technical background information on the EPACMTP and the modeling methodology are provided in the technical Background Documents referenced earlier and available in the RCRA Docket.

Comment: The commenter asserted that risk reduction in the RIA is unsupported because the RIA results depended completely on the extreme differences in the pre-LDR and post-LDR values for the DAF parameter. There is no physical-chemical justification for the large differences in chemical leachability between the pre-LDR scenario and the post-LDR scenario based on the DAF values.

The commenter mentioned that the enormous differences between the pre- and post-LDR DAFs were not explained in the RIA, did not appear to be justified based on fundamental physical properties as suggested by the HWIR results, and yielded erroneously inflated benefit estimates. EPA assumed that the primary difference in waste stream management between the pre- and post-LDR condition was that materials which were previously managed as liquids would subsequently be handled as dewatered materials in waste piles. Thus, the change would be potentially reduced water infiltration in waste piles to yield a larger DAF, because there would be reduced chemical leaching. However, this reduction in water available for leaching in waste piles does not explain the enormous differences in the DAF values adopted in the RIA. The commenter also mentioned that the DAFs were a function of management unit size. The dewatered material would require a smaller management unit to contain, and would reduce the size of the unit one or two orders of magnitude post-dewatering. Thus, the commenter indicated that differences in the magnitude of the DAFs of 10 to 1,000 fold may be explainable on the basis of the physical differences between the surface impoundment and waste-pile management units, but not the billion-fold differences presented in the RIA.

The commenter also noted that the lack of a sensitivity analysis for low-solubility, highly adsorbing chemicals was a serious deficiency in the RIA because chemical-specific aqueous solubility and soil adsorption can lead to enormous variation in chemical leachability.

Furthermore, the commenter indicated that concentration-dependent DAFs could not be used to explain the variability between pre- and post-LDR DAFs. The commenter explained that although non-linear adsorption isotherms for some metals can give rise to concentration-dependent DAFs, this does not account for the differences, for several reasons. First, in the case of four of the metals (arsenic, chromium, selenium, and thallium), the MINETEQA2 model used linearized isotherms such that the DAF for these four metals was by definition not dependent on concentration. Second, the EPACMTP model only applied non-linear adsorption isotherms in the unsaturated zone component of the model. Thus, it would not be expected that a given soil-groundwater system would give rise to large differences in concentration-dependent DAF values given the fact that the concentration dependence was only modeled in the unsaturated zone. Lastly, the DAF for arsenic was not concentration dependent. Therefore, the over 10 million-fold difference in the pre- and post-LDR DAF for arsenic (the single carcinogen driving cancer risk) cannot be explained on the basis of concentration-dependent modeling factors. (COMM1048)

Commenter(s): COMM1048

Response: The commenter's claim (that there is no physical-chemical reason for the enormous (million fold) difference between pre-LDR and post-LDR DAFs) was based on comparison of DAF values across waste management units (i.e. pre-LDR DAF for waste piles against post-LDR values for surface impoundments). The differences in DAF values reported by the commenter are due to two factors. First, the nature of the two waste management units and the mechanisms with which wastes inside them are released into the subsurface are different. Wastes managed in surface impoundments are over 99 percent liquid and the rate with which the contaminants leach into the subsurface is driven primarily by the ponding depth of the liquid in the surface impoundment. On the other hand, wastes in waste piles are mostly solid and their leaching rate is determined by the rate of infiltration though the units. Therefore, the contaminant mass flux at the bottom of the waste management unit tends to be higher in the case of surface impoundments. Secondly, the leachate concentrations of constituents in the post-LDR scenario were capped at their respective Universal Treatment Standards (UTS) levels, and therefore, were lower than the corresponding leachate concentrations used in the pre-LDR scenario. In the latter, constituents in the waste were modeled assuming that the waste is subject to no treatment prior to disposal in waste management units.

The differences between pre- and post-LDR DAFs were approximately 1 to 2 orders of magnitude for most constituents for the same type of waste management scenarios, and were due to differences in the source leachate concentrations for the pre- and post-LDR modeling scenarios.

Comment: One commenter indicated that the Agency used methodologies that provided arbitrary estimates of leachate concentrations for liquid non-wastewater and wastewater streams which report "bulk" or "total" metal concentration (mg/kg), rather than leachate concentration (mg/L). The commenter believed that the Agency's approach of dividing the total concentration by 20 overestimated the leaching potential of constituents that are sparingly soluble in the environment, such as lead. The commenter also noted that in some cases the total concentration was used directly. The commenter recommended that EPA use basic chemical partitioning approaches (such as the chemical's partition coefficient) to estimate a more realistic, physically-based conversion from total to leachable concentrations, given the large percentage (77 percent) of concentrations reported as total.

Commenter(s): COMM1048

Response: The agency considered various approaches to estimating leachate concentrations from bulk concentration data. Examination of the few samples having both bulk and leachate data indicated that there was no consistent relationship between these measures of concentration that would allow a simple consistent relationship (e.g., a Kd or partitioning coefficient) to be developed. Therefore, the agency adopted the admittedly conservative assumption that the constituents present in bulk samples would be completely leachable; this resulted in the ratio of twenty used as the estimate of the TCLP concentration for these values. This approach was used to estimate leachate concentration for nonwastewater streams (streams with greater than 10 percent solids), and liquid nonwastewaters (streams with 1-10 percent solids). For wastewaters (streams with less than 1 percent solids), bulk concentration data were used as estimates of leachate concentration, but only where leachate data for the solids were not available. As explained in the RIA, the Agency's approach was designed to make the maximum use of all the available data in estimating risks for mineral processing waste management.

Comment: The commenter indicated that there would be no risk to groundwater, because of the large DAF values for all constituents stored in waste piles (greater than 1×10^{12}). Thus, the commenter asserted that there would be no need to regulate waste or recycle streams that are managed in waste piles to protect groundwater. (COMM1048)

Commenter(s): COMM1048

Response: The groundwater pathway risks calculated for the storage of recycled streams are all below levels of concern as defined by the Agency. This does indicate that waste piles of these sizes containing these particular wastes may not present serious cause for concern from a risk standpoint. However, these results apply only to the storage of specific streams for short periods of time (ten years) in very small piles. The storage of larger volume streams in larger waste piles for longer periods, or the use of piles for disposal, could well result in much higher risks. Thus, the analysis does not categorically rule out waste piles as potential sources of unacceptable groundwater risks. Moreover, the Agency notes that damages incidents involving mineral processing residues document that risks to groundwater from solids do exist notwithstanding that the wastes modeled in the RIA do not indicate this to be the case. See US Environmental Protection Agency, Office of Solid Waste Human Health and Environmental damages From Mining and Mineral Processing Wastes, April 1998, p.97 describing Anaconda Smelter involving contamination to drinking water supplies from copper flue dust.

D.   Costs of Alternative Feedstock Proposal

Comment: One commenter discussed the costs that gold producers would incur under the alternative feedstocks proposal. The commenter receives millions of dollars in revenues each year from the recovery of gold from secondary materials. Under EPA's co-processing proposal, the commenter would be forced to cease sending these secondary materials to its beneficiation units, thereby losing millions of dollars in revenues and incurring the extra cost of disposing of these materials at off-site facilities. In addition, the commenter would incur a significant cost to reconfigure its production operations so that gold-rich secondary materials are not beneficiated. Further, although the secondary materials are small in volume when compared with the amount of virgin ores used as feedstocks, they are very large in a non-mining context, comprising scores of tons of materials. The commenter noted that the RIA failed to quantify these costs, although the RIA acknowledged that "the logistical and financial impacts ... might be severe is some cases."

The commenter asserted that there would also be environmental costs associated with the alternative feedstock proposal. Secondary materials that would need to be treated would likely be sent off-site for treatment and disposal. The commenter stated that integrated mining and mineral processing facilities tend to be located in non-populated areas, far from traffic, residences, and drinking water wells, whereas commercial treatment facilities tend to be located in more populated areas. Therefore, if mineral processors had to ship their materials off-site to commercial treatment facilities, there would be the potential for traffic accidents and spills, and the ultimate residues of treatment would be land disposed closer to communities and their drinking water wells. (COMM1029)

Commenter(s): COMM1029

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter stated that in evaluating the costs of the alternative feedstocks proposal, EPA assumed that facilities would cease using alternative feedstocks rather than continue to use these feedstocks and manage the resulting wastes as hazardous. The commenter evaluated both of these possibilities, and found the costs to be so great as to be unaffordable for some, if not all, of the commenter's smelters and refineries.

For instance, the commenter evaluated the cost of losing the Bevill status of slag. The commenter estimated the cost of off-site treatment and disposal of all of its slag as over $200 million per year ($43 million/yr for lead slag and $170 million/yr for copper slag, based on a cost of $250/ton currently paid for off-site treatment and disposal). The cost to individual facilities ranges from $10 million/yr to $100 million/yr. These costs exceed the commenter's operating margins. (The commenter noted that copper slag currently tests as non-hazardous, but because of concerns about grab sampling and the nature of the TCLP, the commenter felt that it was important to present the costs of managing copper slag as hazardous.)

The commenter also evaluated the costs of treating the slag on-site. The commenter stated that while it was difficult to understand and interpret the RIA, it appears that EPA estimated an incremental cost of $52 per ton for on-site management. The commenter first questioned whether on-site disposal of slag was practical, given the volume of slag generation and the assumption in the RIA that the stabilized process would increase the volume by 75 percent. The commenter suggested that such a large volume would put "space pressure" on some facilities. The commenter expressed other concerns about the stabilization cost function (described elsewhere in this document) and concluded that the estimated incremental cost of $52/ton was unrealistic in general, and particularly inappropriate for slag. Even this unrealistic low cost, however, could still impose a significant economic burden on the commenter's operations, bringing the financial viability of several plants into jeopardy.

This commenter also evaluated the costs of managing non-virgin feedstocks as hazardous wastes assuming an off-site cost of $250 per short ton. The cost of treating wastes from the copper circuits were approximately $33 million per year, and the costs of treating wastes from the lead operations would also be about $33 million per year. The commenter believed these costs also to be above the individual plants' ability to absorb these costs. The commenter thought that even using the unrealistic $52/ton, the lead plants could not absorb the costs.

The commenter then discussed the more significant cost associated with ceasing to co-process the alternative feedstocks, namely, the loss of the metal value in these materials. The commenter estimated that this cost could exceed $250 million per year for the company ($126 million in the copper division, and $129 million in the lead division). This estimate was based on the following 1996 metal prices: copper at $1.06 / pound, lead at $0.35 per pound, gold at $387.7 per troy ounce, and silver at $5.18 per troy ounce. The commenter also broke these costs up among its five plants, as follows: East Helena - $93 million per year, Glover - $33 million per year, Hayden - $66 million per year, El Paso - $27 million per year, and Amarillo - $36 million per year. The commenter also pointed out that by the time these materials would be removed as waste they would have incurred approximately two thirds of the cost of producing raw metals.

The commenter stated that, if faced with the inability to co-process these materials, it would seek other outlets for sale of these materials. The commenter believes that the markets for such materials will be limited. For example, secondary processing facilities may not be able to accept these particular varieties of waste streams because they are not designed to handle the impurities found in these materials (e.g., arsenic, cadmium, and bismuth). In addition, they are not designed for the recovery of precious metals. The commenter also noted that the capacity of secondary processors to accept these materials is likely to be limited. (COMM1034)

Commenter(s): COMM1034

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: This commenter evaluated the costs of processing solely virgin materials at one of its copper plants and one of its lead plants, and concluded that the base metals production capacity at the lead plant would be reduced by 22 percent and capacity at its copper plant would be reduced by 25 percent, despite increases in the amount of concentrate used. The concentrate increases at each plant were determined by process limitations. That is, the increase at the lead plant is limited to 13 percent because of the sulfur elimination capacity of the sinter machine, and the increase at the copper plant is limited to seven percent because of the capacity of the cyclone pneumatic feeding system.

The commenter also pointed out that the recovery of "payable base metals and precious metals" in the final metal product would be significantly reduced due to loss of these metals in in-process materials that would be disposed. Further, intermediate processes at both plants would be adversely affected in several ways. For instance, the blast furnace at the lead plant could not be fully utilized because only sinter from the existing sintering machine could be processed, the amount of which is limited by the sulfur elimination capacity. At the copper plant, the capacity and operating performance of the Pierce-Smith converters would be detrimentally affected by not using in-process materials (e.g., matte and slag shells) for cooling.

Finally, the commenter stated that the costs associated with the drop in base and precious metal production in lead bullion and copper anodes would be approximately $68 million per year at the lead plant and $65 million per year at the copper plant. The commenter noted that these costs represent losses in revenues that do not include additional processing costs, and would not be financially sustainable for either facility. (COMM1034)

Commenter(s): COMM1034

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter stated that even though none of their exempt wastes are hazardous, the potential cost of managing these exempt wastes as hazardous is so large that their continued coverage under the Bevill exclusion is vital to their long term economic existence. This commenter thought the risk of its tailings leach ore and slag becoming hazardous through the use of mineral processing secondary materials would be small, while the costs of having to dispose of these exempt waste as hazardous waste would be tremendous. (COMM1043)

Commenter(s): COMM1043

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: Two commenters discussed BHP Copper's analysis of the costs of the proposed rule, concluding that the RIA severely underestimated the costs of the rule. BHP estimated the treatment and disposal costs of four types of secondary materials at its San Manuel facility independently and utilizing the

cost equations from the RIA, and also addressed lost metal values. These four materials, all of which are currently co-processed, include: flash furnace dust; converter flue dust; smelter brick and related materials; and refinery bleed solution. Despite the fact that BHP made several simplifying assumptions that resulted in lower costs (including that the neutralization and precipitation of refinery bleed would achieve the required LDR levels therefore precluding the need for additional dewatering and stabilization) BHP estimated a significantly higher cost ($8 million) than the RIA equations predicted ($4 million) for these four waste streams. BHP's estimate of the off-site treatment and disposal costs ($95 million) was also significantly higher than the estimate of off-site treatment and disposal costs using the RIA equations ($43 million). BHP also estimated the loss of revenue from these streams to be $52 million. Therefore the total cost to the San Manuel facility would be between $56 million and $147 million. The commenter noted that the largest single component of these costs estimates is the loss of revenues, representing 35 to 93 percent of the total cost. In addition, this loss of revenue (which amounts to six percent of BHP's revenues) would not be accompanied by a corresponding reduction in processing costs, since these materials would have been carried almost all the way through the production process. (COMM1043, COMM1048)

As a result of this analysis, one commenter found that the RIA was so flawed that it could not be used as a basis to compare the costs and benefits of the proposed rule, and asserted that EPA must revise the RIA to account for the real impacts of the proposal. (COMM1043)

Commenter(s): COMM1043; COMM1048

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter stated that the costs at its Delta, UT mill would be substantial if the alternative feedstocks proposal were implemented, and added that these costs were not evaluated in the RIA. These costs fell in two general categories: loss of recycling value and the cost of treating and disposing of these secondary materials. The commenter indicated that six recycled materials would no longer be recycled, including dust scrubber blowdown, product scrubber blowdown, thickener overflow filter wastewater, leach scrubber blowdown, zinc barren filtrate, and AIS recovery filtrate. Two of these streams would be considered hazardous (beryl thickener slurry and spent raffinate) because of their low pH and would need to be treated to neutralize the pH. The cost of treating these two waste streams would include construction of a neutralization system, purchase of reagent (lime), possible stabilization of gypsum generated by the neutralization process, and disposal of neutralized and/or stabilized residue. If full stabilization of the neutralization raffinate is required, the capital cost is estimated to be $5 million and the annual operating cost is estimated at $1.8 million. The commenter thought these costs were substantial in light of its 1996 pre-tax net income of $33.2 million ($24.5 million after tax), and the expected reduction of net income.

In addition, the available capacity of the tailings pond would be filled more quickly, requiring construction of a new lift at an earlier date than is currently required. The State of Utah has informed the commenter that any new tailings ponds must be constructed with a synthetic membrane liner. The commenter estimated that the cost of a liner would be $18,600 per acre for a single liner, and $54,000 per acre for a double liner with a leak detection system. The commenter stated that it would be prohibitively expensive to build tailings ponds with multiple liners that are hundreds of acres in size. The commenter argued that it would be inappropriate to apply EPA design standards for hazardous waste disposal cells to tailings ponds because: 1) the wastes handled in tailing ponds are not nearly as toxic as hazardous waste, 2) the scale of the tailings facilities are so much larger, and 3) the unit value of tailings is much lower than hazardous waste. (COMM1052)

Commenter(s): COMM1052

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter estimated that the costs of the alternative feedstocks restrictions for New Mexico copper mining and mineral processing facilities could exceed $250 million annually. This includes $200 million in lost revenues from the inability to recover copper values from reverts, dusts, brick, and other copper bearing materials, and $50 million to dispose of these materials. The impact on copper processors alone far exceeds EPA's estimate of $10 million annually. The commenter suggested that, because there is no benefit to the environment (because the environmental benefit of recycling is eliminated), the only beneficiary of the rule would be the waste treatment industry. (COMM1085)

Commenter(s): COMM1085

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

E.   Economic Impacts

1.   General Discussion

Comment: One commenter stated that the EPA's indicators of economic impact and their thresholds of significance do not accurately measure the ability of the industry to absorb the incremental regulatory costs, nor do they incorporate the various additional cost and revenue impacts. The commenter mentioned that the arbitrary ratios of regulatory cost to value added or gross profits used by the RIA do not meaningfully measure the ability of an industry to bear the imposed costs. These measures do not consider the cost and revenue impacts beyond the incremental storage and treatment/disposal costs, as well as the effects on industry waste streams not included among the 118 waste streams designated by EPA or on waste streams from other industries.

Additionally, the commenter indicated that EPA does not comprehend the severity of an incremental cost impact. The commenter mentioned that an incremental cost impact of less than gross profit may represent a very severe impact on a firm even in the relatively short term. The commenter added that with respect to the RIA's ratio of incremental cost-to-shipments value, the 10 percent threshold of significant impact appears to be extremely high, because in a competitive environment, incremental regulatory costs of just 1 percent of sales would be a significant burden. The commenter also mentioned that EPA overestimated the profit denominator in the economic impact ratio in its comparison of incremental costs to profits due to the inclusion of earnings from activities unaffected by the proposed rule. With an adjustment for these earnings, the commenter believed that there would be an increased negative economic impact due to the regulation. Lastly, the commenter mentioned that the RIA did not estimate the impact of the proposal on other industries. (COMM1048)

Commenter(s): COMM1048

Response: The Agency believes that the commenter's concerns about the inclusiveness of the cost estimates used to calculate economic impacts (such as not including cost beyond treatment and storage costs, and not including other waste streams or industries) pertain to the alternative feedstocks proposal, which has been withdrawn from the final rule. With respect to the indicators and thresholds used to measure economic impacts, the Agency recognized in the RIA that its analysis was limited due to significant limitations in the available data, but continues to believe that the methodology is adequate (particularly given the data limitations). The commenter argues that the 10 percent threshold for the ratio of cost to value-added is high given the significance of an increase in costs equal to just one percent of sales. The commenter does not suggest an alternative threshold, however, and the Agency notes that a one percent threshold for cost to sales would necessarily equate to a higher threshold for cost to value-added (because a firm's value-added is less than its sales). The commenter also argues that the RIA's threshold of 100 percent of gross profits is too high, and that the profits data used in the analysis overstates profits by including affected entities' profits on activities not related to the proposed rule. The Agency did not mean to imply that cost impacts are not significant if they are less than 100 percent of profits. Rather, the Agency applied this threshold in order to put potential cost impacts in perspective relative to a key economic indicator; the Agency recognizes that impacts may still be significant even if they are less that the 100 percent threshold used to assign "severe impacts." The commenter's other concern, that the profits data were overstated, does have some merit, as was noted in the RIA. The RIA minimized this concern, however, by limiting the profits analysis to firms known to be engaged primarily or exclusively in processing a single type of mineral. Thus, profits from activities unrelated to the proposed rule were limited.

Comment: One commenter asserted that EPA provides little evidence for the feasibility of lining tailing impoundments at copper-producing facilities and has ignored the potential economic impacts of such a requirement in its background document, *Feasibility of Lining Tailings Ponds*. EPA concludes that it is possible to line waste management units such as tailings ponds and waste piles. The document showed that the feasibility of lining mining waste management units was based on tailings ponds that were 200 to 400 acres in size. The commenter disagreed with this conclusion, adding that the large size, terrain, and engineering and seismic considerations are reasons why copper mine tailing impoundments are not presently lined. Additionally, the commenter indicated that the cost of constructing a new, lined tailing impoundment, typically $25 to $40 per square foot, is economically infeasible for impoundments which can be larger than 3,000 acres. (COMM1089)

Commenter(s): COMM1089

Response: At this point, the Agency is not aware of any newly identified copper processing wastes that would need to be stored prior to recycling in surface impoundments of this magnitude.

Comment: One commenter opposed EPA's classification of raffinate as a non-uniquely associated feedstock rather than as a Bevill material. The commenter indicated that the impacts of this classification could be immense if raffinate, which contains acidic and mineral values, could no longer be used during leaching operations. The commenter believed that leaching operations would become too costly to continue because the costs of using virgin acid in the leaching processing and of disposing of the collected raffinate would be prohibitive. Moreover, the potential economic consequences of losing the Bevill exemption for a leach stockpile would be staggering if the pile is considered a RCRA hazardous waste facility. (COMM1090)

Commenter(s): COMM1090

Response: After review of the uniquely associated principal, EPA has determined that raffinate from copper solvent extraction is a uniquely associated beneficiation waste from copper production. As such it may be used in beneficiation operations provided the conditions listed at 40 CFR 261.4(b)(7)(iii) are met. Also, the rule does not restrict use of hazardous secondary mineral procesing materials in Bevill process units.

2. Concern about Restrictions on the Use of Alternative Feedstocks

Comment: Four commenters asserted that the RIA fails to consider all of the potential economic impacts of the proposal. (COMM1043, COMM1048, COMM1089, COMM1090) One commenter stated that the RIA severely underestimates the costs of the proposed rule, which will severely affect the mining and mineral processing industry. This commenter indicated that additional costs imposed on industry are inappropriate when little benefit from additional regulation is demonstrated because these costs are likely to have an extremely severe impact on particular sectors. The commenter noted that the economic impacts of the alternative feedstock restriction may have adverse consequences on industry without any corresponding environmental benefit. (COMM1048) The second commenter indicated that the impact to its facility is estimated to be greater than that estimated by EPA for the entire mining and mineral processing industry. (COMM1043) The third commenter added that EPA has not considered the environmental or economic costs in the RIA. The commenter asserted that proposing a restriction on the recycling of alternative feedstocks without evidence of environmental damages or an adequate RIA is highly inappropriate. (COMM1089) The fourth commenter indicated that the proposed rule penalizes the mining and mineral processing industry for recycling and recovering valuable minerals, acids, and water. The commenter stated that the RIA fails to address the economic impacts from lost mineral values and disposal, and the RIA also does not consider the potential economic and social consequences resulting from the potential loss of the domestic mining and mineral processing industry. (COMM1090)

Commenter(s): COMM1043; COMM1048; COMM1089; COMM1090

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: Two commenters argued that the elimination of the Bevill Amendment for co-processed materials would have a considerable economic impact on the mining and mineral processing industry, as well as a profound effect on the recycling of co-processed materials. (COMM1089, COMM1090) One commenter indicated that the RIA did not consider the lost value to the mining and mineral processing industry of being unable to recycle "non-virgin" material in Bevill units, or the exorbitant potential costs of having to manage those materials as hazardous wastes. The commenter believed the proposed rule would have a "profound" economic impact on the mining and mineral processing industry, the nation, and specifically, on the rural areas of the western United States. The commenter also mentioned that the average profitability of the mining industry is low, and the costs of technological and capital improvements and new mine developments are substantial. Thus, the impact of the rule's restrictions would be considerable. Due to the alternative feedstock restriction, the commenter estimated that potential costs for its facility would be more than $300 million per year, more than five times EPA's estimate of the economic impact on the entire mining and mineral processing industry. (COMM1089)

Both commenters expressed concern that EPA ignored the impacts of lost revenues, increased disposal costs, and operational problems that would result from implementation of the alternative feedstock restriction. The commenters believed that secondary materials generated in the copper smelting, refining, solvent extraction, and electrowinning processes, as well as in-process and intermediate materials with high copper values, would no longer be recycled. These commenters provided an estimate of the economic impact of the proposed alternative feedstock restriction on Arizona copper mining and processing operations and Arizona-based copper companies. These commenters suggested that the impact could be a loss of approximately $300 million in mineral-recovery revenues because the industry would be unable to recycle the copper-bearing materials generated on-site. In addition, these commenters mentioned that $120 million would be spent annually to dispose of these materials and the lost revenues from not recycling copper, gold, and silver bearing materials could equal $20 million. These commenters remarked that their conservative estimate of about $400 million far exceeds EPA's estimated impact of $10 million for mineral processing operations, and urged EPA to reconsider its support for the Bevill amendment. (COMM1089, COMM1090)

Commenter(s): COMM1089; COMM1090

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter emphasized that certain sectors would be significantly affected by the proposed regulation, particularly cadmium and lead. The incremental costs for facilities in these sectors would be difficult to bear and remain viable. (COMM1048)

Another commenter indicated that the RIA underestimates the costs of waste management under the proposed regulation. The commenter noted that EPA's regulatory cost estimate of $27,000,000 annually, or 13.19 percent of the estimated shipping value of product from the lead industry, exceeds the value added margins of smelter processing of feeds. This action would cause the industry to become uneconomical. Additionally, the commenter indicated that the costs are understated by 65 percent because the RIA did not incorporate the cost of replacing the discarded sludges with replacement feedstock material. (COMM1019)

The commenter also mentioned that the RIA underestimated production data for its facilities. The commenter stated that its 1995 production was low due to the effects of labor disruption. The commenter projected that its Herculaneum facility would produce 225,000 to 240,000 short tons of lead and lead alloys, its Glover plant would produce 130,000 short tons, and its East Helena facility would produce 80,000 short tons of lead contained in bullion. Thus, 400,000 metric tons of smelting would be a better estimate for the analysis rather than the RIA's estimate of 290,000. The commenter added that mine and smelter economic impacts should be calculated separately, because economic decisions in the industry are made at the facility level and not for the entire business. Therefore, the commenter indicated that the impact on the smelters as a percent of profit or value added revenues is much more severe than reported, and would force the smelting side of the lead production business to close. The commenter added that, given the minor environmental improvement expected under the proposed rule, the cost to industry would be better spent on more important environmental work such as slag metal recovery research. (COMM1019)

Commenter(s): COMM1019; COMM1048

Response: The Agency appreciates the updated production data and will use it in the economic impact analysis in the final RIA. As mentioned above, the Agency has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter emphasized the importance of the use of alternative feedstocks within the metals processing industry. The commenter believed that if materials in the leaching process fell under the "virgin feedstock only" provisions, then significant costs, disruptions, and waste management issues would be imposed on mineral processing operations. The commenter asserted that no primary lead or copper metals extraction industry could rely solely on virgin feedstocks because the use of alternative feedstocks is fundamental to the economics of primary non-ferrous metals extraction.

The commenter also provided a profile of the use of non-virgin feedstocks at its metal processing plants during 1996. At the Glover plant, approximately 33 percent of the refined lead produced resulted from the processing of "non-virgin" feedstocks. For its copper processing plants, about 15 to 25 percent of the anode production was attributed to extracting copper from non-virgin feedstocks. At the East Helena plant, about 21 percent of the lead bullion production resulted from extracting the lead content from non-virgin feedstocks that were internally generated within the plant, and about 19,000 tons of non-virgin feedstock came from its other facilities. In addition, 43,000 tons of non-virgin feedstocks processed at the plant came from sources outside of its facilities, the majority of which came from other primary metal smelting and refining operations. (COMM1034)

Commenter(s): COMM1034

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: Two commenters expressed concern that the potential impact of the alternative feedstock restriction would be profound. (COMM1089, COMM1090) One commenter indicated that this provision could force an end to leaching operations, which would be devastating to the Arizona economy because it depends on the financial success of mining operations. (COMM1090) Another commenter estimated that the potential economic impact of the proposed rule on its mineral processing operations could be more than $300 million annually, because it would be unable to recycle or process mineral-bearing materials without losing the Bevill Amendment exclusion. (COMM1089)

Commenter(s): COMM1089; COMM1090

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: One commenter stated that EPA's estimate of the costs of the alternative feedstock proposal -- $45 million annually -- significantly underestimates the actual costs to industry. The commenter asserted that international metal exchanges determine non-ferrous metal prices, and therefore, domestic producers have no ability to pass additional environmental costs on to consumers in the form of higher prices. The commenter also indicated that increases in cost would put domestic facilities at a competitive disadvantage internationally, particularly during periods of depressed prices. Because of the potential for facility closure, the commenter stated that the impact of any new regulatory cost must recognize the ability of domestic facilities to absorb such costs and still remain competitive in world markets. The commenter added that this proposal would result in severe impacts on the lead and copper industry, without any documentation of net environmental benefit. (COMM1034)

Commenter(s): COMM1034

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

Comment: Three commenters asserted that EPA's proposal, particularly the alternative feedstocks restriction, would reduce domestic production and hinder the international competitiveness of U.S. mining and mineral processing facilities. (COMM1034, COMM1041, COMM1069) One commenter indicated that it could result in greater reliance on international production because overseas firms would not be subject to similar compliance costs as U.S. firms. The net result would be a loss of jobs in the United States, increased reliance on foreign suppliers for strategic metals, a negative impact on the balance of trade, and increased mining and mineral processing activity overseas, including developing countries where environmental requirements may not match those of the United States. (COMM1034) Another commenter mentioned that EPA's restrictions may cause the last remaining producer of ferrochromium to cease operations, driving the ferrochromium industry overseas. (COMM1069)

Commenter(s): COMM1034; COMM1041; COMM1069

Response: The Agency appreciates these comments and has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule.

F.   Benefits/Risk Results

1.   Overestimation of Benefits

Comment: One commenter asserted that the Agency overestimated the benefits of risk reduction because the estimates were based on invalid assumptions and on baseline assumptions that were not representative of current practice. The commenter indicated that the benefits analysis applies only to the non-recycled materials because no risk assessment was performed for the recycle scenario to quantify risk reduction. The commenter noted that EPA indicates that the modified prior treatment baseline best characterizes current practice (assuming treatment of wastes to TC levels). However, the risk assessment was performed on a baseline assuming that no prior treatment occurs.

The commenter also pointed out that because the TC level and the UTS level are the same for arsenic (the only ingested carcinogen affected by the rule), there would be no risk reduction at all for ingested carcinogens. The commenter believed that the Agency's use of these critical assumptions erroneously inflates its benefits estimate, and as such, the risk cannot be justified on the basis of risk reduction. (COMM1048)

Commenter(s): COMM1048

Response: As noted above, the Agency has indicated that the benefit associated with changes in the disposal practices for mineral processing wastes were calculated against the NPT (No prior treatment baseline). Subsequently, benefits for disposal were measured against the MPT (modified prior treatment) baseline, and it was concluded that there would be no significant benefits, in terms of reduced health risks,

under this scenario because there would be no significant changes in waste management practices. This would apply equally to the risks arising from exposure to arsenic, as well as to risks from other constituents.

The commenter is correct that there is no quantitative benefit calculation for recycled materials. For these materials, the risks associated with land storage were assessed under baseline conditions. These results do, however, provide some idea of the degree of risk reduction that potentially could be achieved if land storage of recycled materials was limited or abolished under LDRs.

2. Impact on Co-Processing

Comment: One commenter remarked that EPA did not analyze the environmental benefits associated with a restriction on co-processing of gold or any other mineral, much less non-mineral processing secondary materials (such as assay laboratory solutions containing gold). The RIA did not provide any basis for conclusions as to the cost-effectiveness of the proposal or as to whether the proposal's benefits outweighed its costs on gold producers. The commenter added that on-site recycled secondary materials do not add to any environmental risk in the gold sector. Thus, it is possible that the EPA's co-processing proposal may not benefit the environment at all. The commenter also indicated that EPA failed to take into account the potential environmental costs of imposing restrictions on co-processing. One result of the co-processing restriction would be to encourage producers to ship secondary materials off-site to commercial waste disposal facilities that tend be located in more populous areas. (COMM1029) Another commenter mentioned that EPA had not produced any evidence to show that limiting legitimate recycling in the copper-producing sector would provide any environmental benefits. This commenter stated that recycling restrictions would actually be a detriment to the environment, the public, and the industry at large. (COMM1089)

Commenter(s): COMM1029; COMM1089

Response: EPA did not have any data related to the composition of wastes from the gold processing sector. Therefore, quantitative benefits were not estimated for that commodity sector, either directly or in the context of co-processing. The Agency again notes that it has withdrawn the alternative feedstocks proposal from the final rule.

The Agency evaluated potential risks to human health from the land storage of recycled streams from the copper industry. For some waste samples and some facilities, screening level risks were substantially above levels of concern for groundwater and surface water exposure pathways under baseline conditions. EPA has not evaluated the degree of risk reduction that would be achieved by the prohibition of land storage of these materials under the LDRs, and has thus not performed a quantitative benefits assessment. This does not mean, however, that benefits may not accrue.

As discussed previously, the Agency is currently developing data on the frequency with which recycled materials are stored on the land in the copper and other metal processing industries. These data will be used to clarify the potential benefits of the LDR restrictions on land storage.

G.   Regulatory Flexibility Analysis

Comment: One commenter mentioned that EPA should perform realistic cost-benefit analyses pursuant to EO 12866 and analyze alternative regulatory approaches pursuant to the Regulatory Flexibility Act. This commenter noted that EPA did not conduct any analysis of the benefits of removing Bevill-exempt status for co-processing wastes. (COMM1088)

Commenter(s): COMM1088

Response: As noted above, the Agency believes it has prepared a complete RIA. The Agency also notes that it has withdrawn the restrictions on placing alternative feedstocks in Bevill units (i.e., the alternative feedstocks proposal) from the final rule. The Agency also notes that a Regulatory Flexibility Analysis is not required for the Phase IV rule because it does not impose a significant impact to a substantial number of small entities.